

# TORZEN™ U4830HSL BK01 PA66 RESIN

## POTENTIAL APPLICATIONS



### VALUE IN USE FOR PA66:

A unique balance of heat stability, UV resistance, good mechanical properties, fast cycling, and ease of ejection from mold



### APPLICATION SPACE:

Automotive, electrical and electronics, appliances, household

### TARGETED AND/OR VALIDATED PARTS:

- Carbon canisters • Cable ties • Wiring devices

## COMPARATIVE ANALYSIS: TORZEN™ U4830HSL RESIN VS COMPETITIVE GRADES

### TORZEN™ U4830HSL PA66 Resin

### Leading Competitors' Products

Property	Units	TORZEN™ U4830HSL PA66 Resin	Leading Competitors' Products
Tensile Strength @ Yield	MPa	84	83 - 85
Elongation @ Break	%	30	20 - 40
Tensile Modulus	MPa	3200	2800 - 3000
Notched Charpy @ 23°C	kJ/m <sup>2</sup>	6.0	5.5 - 6.6
Notched Charpy @ -30°C	kJ/m <sup>2</sup>	4.6	4.5 - 5.3
HDT @ 0.45 MPa	deg C	199	200
Density	g/cm <sup>3</sup>	1.14	1.14
Flammability Classification @ 0.71mm	UL94	V-2	V-2

TORZEN™ U4830HSL PA66 RESIN SHOWS AN EXCELLENT BALANCE OF PROPERTIES

## PERTINENT APPLICATION LEVEL DATA

Property	Units	Method	GMP-PA66-018 Requirement	TORZEN™ U4830HSL BK01 Resin
Density	g/cm <sup>3</sup>	ISO 1183	1.10 - 1.16	1.14
Tensile Strength at Yield (50 mm/min)	MPa	ISO 527	75 min	87
Tensile Strength after 1000 hrs at 100°C	MPa	ISO 188/SAE J1639	75% retention	~100% retention
Flexural Modulus	MPa	ISO 178	2500 min	3100
Notched Izod at 23°C	kJ/m <sup>2</sup>	ISO 180	3.3 min	4.7
N-Izod after 1000hrs at 110°C	kJ/m <sup>2</sup>	ISO 188/SAE J1639	75% retention	~100% retention
Notched Izod at -40°C	kJ/m <sup>2</sup>	ISO 180	2.0 min	4.8
Flammability	mm/min	ISO 3795:1989 (E)	<100	0
Melting Temperature, 10°C/min	°C	ISO 11357	257 - 268	263
HDT at 1.82 MPa	°C	ISO 75	57 min	75

### TORZEN™ U4830HSL PA66 RESIN - UL RECOGNITION WITH RTI RATING

Thickness (mm)	Tensile RTI		Electrical RTI		Impact RTI	
	TORZEN™ U4830HSL PA66 resin	Zytel® 103FHS*	TORZEN™ U4830HSL PA66 resin	Zytel® 103FHS*	TORZEN™ U4830HSL PA66 resin	Zytel® 103FHS*
0.71	120	115	140	140	105	95
1.5	125	125	140	140	110	110
3	125	125	140	140	110	110

TORZEN™ U4830HSL PA66 RESIN SHOWS EQUIVALENT OR HIGHER PROPERTIES THAN LEADING COMPETITIVE RESINS

\* UL Yellow Card data of Zytel® 103 FHS

Properties (dry)		Value	Units	Method
Physical	Density	1.14	g/cm <sup>3</sup>	ISO 1183
	Mold Shrinkage, 2.0 mm, Parallel	1.9	%	ISO 294-4
	Mold Shrinkage, 2.0 mm, Transverse	1.8	%	ISO 294-4
	Water Absorption - 24 hours	1.4	%	ISO 62
	Water Absorption - Equilibrium @ 50% RH		%	ISO 62
Mechanical	Tensile Strength at Yield (50 mm/min)	87	MPa	ISO 527
	Tensile Strength at Break	-	MPa	ISO 527
	Elongation at Yield	3.9	%	ISO 527
	Elongation at Break	30	%	ISO 527
	Tensile Modulus (1 mm/min)	3100	MPa	ISO 527
	Flexural Modulus	3100	MPa	ISO 178
	Flexural Strength	101	MPa	ISO 178
	Notched Charpy at 23°C	4.6	kJ/m <sup>2</sup>	ISO 179
	Notched Charpy at -30°C		kJ/m <sup>2</sup>	ISO 179
	Unnotched Charpy at 23°C	NB	kJ/m <sup>2</sup>	ISO 179
	Unnotched Charpy at -30°C		kJ/m <sup>2</sup>	ISO 179
Thermal	Notched Izod at 23°C	4.7	kJ/m <sup>2</sup>	ISO 180
	Melting Temperature, 10°C/min	263	°C	ISO 11357
	HDT at 0.45 MPa	203	°C	ISO 75
	HDT at 1.82 MPa	75	°C	ISO 75
	CLTE, 2.0 mm, Parallel, 23 - 55 °C		10 <sup>-4</sup> /°C	ASTM E831
Electrical	CLTE, 2.0 mm, Transverse, 23 - 55 °C		10 <sup>-4</sup> /°C	ASTM E831
	Surface Resistivity		ohms	IEC 60093
	Volume Resistivity, 2.0 mm		ohm-cm	IEC 60093
	Dielectric Strength, 1.0 mm		kV/mm	IEC 60243
Flammability	Comparative Tracking Index, 3.0 mm		volts	IEC 60112
	Flammability Classification (0.40 mm)	V-2	—	UL 94
	Glow Wire Flammability Index (0.71 mm)		°C	IEC 60695-2-12
	Glow Wire Flammability Index (1.5 mm)		°C	IEC 60695-2-12
	Glow Wire Flammability Index (3.0 mm)		°C	IEC 60695-2-12
	Glow Wire Ignition Temperature (0.71 mm)		°C	IEC 60695-2-13
	Glow Wire Ignition Temperature (1.5 mm)		°C	IEC 60695-2-13
Glow Wire Ignition Temperature (3.0 mm)		°C	IEC 60695-2-13	

### Product Description

TORZEN™ U4830HSL BK01 resin is a heat-stabilized, lubricated molding grade PA66 in black color. The heat stabilizer system has been designed to provide excellent property retention in high temperature applications. U4830HSL is also available in natural color.

### General Information

#### Material Status

Commercial: Active

#### Availability

North America, South America, Europe, Asia

#### Features

Good property retention at elevated temperatures and excellent processability

#### RoHS

No intentional additives or ingredients used in TORZEN™ U4830HSL BK01 are among those in the European directive 2002/95/EC (RoHS), as amended.

### Process Guidelines for Molding

Drying Temperature	80 °C
Drying Time*	3 - 4 hours
Barrel Temperatures	
Rear	250 - 270 °C
Middle	270 - 290 °C
Front	270 - 290 °C
Nozzle	270 - 290 °C
Processing Temperature (melt)	280 - 300 °C
Mold Temperature	50 - 90 °C
Back Pressure**	2 - 10 bar
Vent Depth	0.007 - 0.04 mm
Cushion (range)	4 - 6 mm
Suggested Moisture (max)	0.18 wt%
Suggested Moisture (min)	0.08 wt%
Screw Speed	75 - 180 rpm

\* Initial moisture below 0.25 wt%. Use dehumidified air.

\*\* Melt pressure

### INVISTA Engineering Polymers

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